CyberResearch

Displays

MRAx Series

MRAB 12: 12.1" TFT LCD Rack-Mount Monitor (800x600)

MRAD 15: 15" TFT LCD Rack-Mount Monitor (1024x768)

MRAE 18: 18.1" TFT LCD Rack-Mount Monitor (1280x1024)

USER'S MANUAL
VERSION 1.5

No part of this manual may be reproduced without permission.

CyberResearch, Inc.

www.cyberresearch.com

25 Business Park Drive, Branford, CT 06405 USA
203-483-8815 (9am to 5pm EST) FAX: 203-483-9024

TRADEMARKS

"CyberResearch," "MRAB 12," "MRAD 15, and "MRAE 18" are trademarks of CyberResearch, Inc. Other product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

• NOTICE •

CyberResearch, Inc. does not authorize any CyberResearch product for use in life support systems, medical equipment, and/or medical devices without the written approval of the President of CyberResearch, Inc. Life support devices and systems are devices or systems which are intended for surgical implantation into the body, or to support or sustain life and whose failure to perform can be reasonably expected to result in injury. Other medical equipment includes devices used for monitoring, data acquisition, modification, or notification purposes in relation to life support, life sustaining, or vital statistic recording. CyberResearch products are not designed with the components required, are not subject to the testing required, and are not submitted to the certification required to ensure a level of reliability appropriate for the treatment and diagnosis of humans.

Contents

1. General Information

1.1.   Safety

Please read these safety instructions carefully and keep this user's manual for future reference.

Disconnect the display from any AC outlet before cleaning. Do not use liquid for cleaning; use a damp cloth. Keep the unit from high humidity. Place carefully on a sturdy, level surface when installing to avoid damage.

Make sure that the voltage of the power source is correct before connecting the equipment to the power outlet.
Position the power cord to avoid steppping on or placing anything on it.
If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.

Never pour any liquid into an opening. This could cause fire or electrical shock. Do not open the equipment. For safe reasons, only qualified service personnel should open the equipment.

Get the equipment checked by service personnel if: the power cord or plug is damaged; liquid or moisture has penetrated the unit; it is not functioning properly work according to the user's manual; the unit has been dropped & damaged; the unit has obvious signs of breakage.

DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 60°C (140°F). IT MAY DAMAGE THE EQUIPMENT.

1.2.　　Packing List

The LCD monitor comes with the following standard parts shown as below. Check and make sure they are included and in good condition. If anything is missing or damaged, please contact CyberResearch, Inc. immediately.

1. Industrial Display Panel x 1 pc
2. Industrial Display Panel Users Manual Disk x 1 pc
3. AC to DC power adaptor x 1 pc
4. VGA Cable 1.2 M x 1 pc

With Touchscreen Option:
1. Touchscreen Manual x 1 pc
2. Touch Pen x 1 pc
3. Drive Disk for Windows 95/98 v3.1
4. Drive Disk for Windows NT 4.0 v3.1
5. Drive Disk for DOS v7.06B & WIN 3.1 v3.01

To comply with the FCC & CE regulations, video cables included with the LCD monitor are ferrite-loaded.

Please keep the carton and the packing materials in case you might need them for moving your monitor in the future.

1.3.   Features of Display Panels

This menu provides full ranging analog interface LCD panels, which are 12.1" (SVGA), 15"(XGA) and 18.1" (SXGA) high-bright, long lifetime TFT LCD monitors.

1.3.1. MRAB 12

- Heavy-duty stainless steel chassis & NEMA 4/12 & IP 65 aluminum alloy front panel
- 12.1" VGA (800x600 resolution) color TFT LCD display
- Analog RGB signals directly input with A/D board interface offering multi-scan function
- RS-232, adapter, RGB terminals and AV input
- OSD (On-Screen Display) controller on the front panel
- Touchscreen (optional)
- Uses standard VGA card
- 12VDC external power adapter
- High-bright 250 nits (250 cd / m2), long-lifetime (20,000 hrs)
- 19" rack-mount panel
- Wall mount: VESA 75 standard (optional)
- Desktop: VESA 75 standard (optional)
- Cable saddle
- Cable length: up to 20 meters
- Auto detect NTSC, PAL and Secam
- Adapter holder

1.3.2. MRAD 15

- Heavy-duty stainless steel chassis & NEMA 4/12 & IP 65 aluminum alloy front panel
- 15" XGA (1024x768 resolution) color TFT LCD display
- Analog RGB signals directly input with A/D board interface offering multi-scan function
- RS-232, adapter, RGB terminals and AV input
- OSD (On-Screen Display) controller on the front panel
- Touchscreen (optional)

- Uses standard VGA card
- 12VDC external power adapter
- High-bright 250 nits (250 cd / m^2), Long-lifetime (25,000 hrs)
- 19" rack-mount panel
- Wall-mount: VESA 75 standard (optional)
- Desktop: VESA 75 standard (optional)
- Cable saddle
- Cable length: up to 20 meters
- Auto detect NTSC, PAL and Secam
- Adapter holder

1.3.3. MRAE 18

- Heavy-duty stainless steel chassis & NEMA 4/12 & IP 65 aluminum alloy front panel
- 18.1" SXGA (1280x1024 resolution) color TFT LCD display
- Analog RGB signals directly input with A/D board interface offering multi-scan function
- RS-232, Adapter, RGB terminals and AV input
- OSD controller on the front panel
- Touchscreen (Optional)
- Uses standard VGA card
- DC/12V external power adapter
- High-bright 235 nits (235 cd / m^2), Long-life time (25,000 hrs)
- 19" rack-mount panel
- Wall-mount: VESA 75 standard (optional)
- Desktop: VESA 75 standard (optional)
- Cable saddle
- Cable length: up to 20 meters
- Auto detect NTSC, PAL and Secam
- Adapter holder

1.4.   General

1.4.1. MRAB 12
- **Construction**: Heavy-duty stainless steel chassis & aluminum alloy front panel
- **Dimension**:339 (W) x 341 (H) x 230 (D) mm
- **Gross Weight**: 7.5kg

1.4.2. MRAD 15
- **Construction**: Heavy-duty stainless steel chassis & aluminum alloy front panel
- **Dimension**: 420 (W) x 300 (H) x 55 (D) mm
- **Gross Weight**: 10.3kg

1.4.3. MRAE 18
- **Construction**: Heavy-duty stainless steel chassis & aluminum alloy front panel
- **Dimension**: 450.5 (W) x 383 (H) x 55 (D) mm
- **Gross Weight**: 13Kgs

1.5. Touchscreen (Optional)

- **Type**: 4/8-wire, analog resistive
- **Resolution**: Continuous
- **Light Transmission**: 72% (surface meets 4H, ASTM-D-3363-92A standard.)
- **Operating Pressure**: 30-45 grams for finger, 10 grams for stylus pen. Contact bounce< 10ms
- **Controller**: RS-232 interface
- **Power Consumption**: +5V @200mA
- **OS Support**: MS DOS, Windows 3.1, Windows 95, Windows 98, Windows NT.

1.6. Environment

- **Operating Temperature**: 0°C to 50°C
- **Storage Temperature**: -20°C to 60°C
- **Relative Humidity**: 5 to 95%, non-condensing
- **Altitude**: 10,000 ft. (3000 meters)
- **Vibration:** 5 to 17Hz, 0.1" double-amplitude displacement 17 to 500Hz, 1.5G peak to peak
- **Shock**: 10G peak acceleration (11 msec. duration)
- **Safety**: meets UL / CSA / TUV
- **EMI**: FCC / VDE Class A

1.7.   Order Information

- **MRAB 12**:
  With 12.1" SVGA color LCD display
  Includes: External power adapter and 1.2m VGA extension cable
- **MRAB 12-T** (optional touchscreen)

- **MRAD 15**:
  With 15" XGA color LCD display
  Includes: External power adapter and 1.2m VGA extension cable
- **MRAD 15-T** (optional touchscreen)

- **MRAE 18**:
  With 18" SXGA color LCD display
  Includes: External power adapter and 1.2m VGA extension cable
- **MRAE 18-T** (optional touchscreen)

1.8.   Dimensions

<div align="right">

Unit: mm
</div>

1.8.1. MRAB 12

1.8.2. MRAD 15

1.8.3. MRAE 18

450.5

483

55

323.7

121.6

399

383

21.6

SOURCE   MENU   UP   DOWN   POWER

KEY PAD SCALE 2/1

TOUCH OPTION

ADAPTER
RGB
VIDEO OUT
S VIDEO
VIDEO 1
VIDEO 2
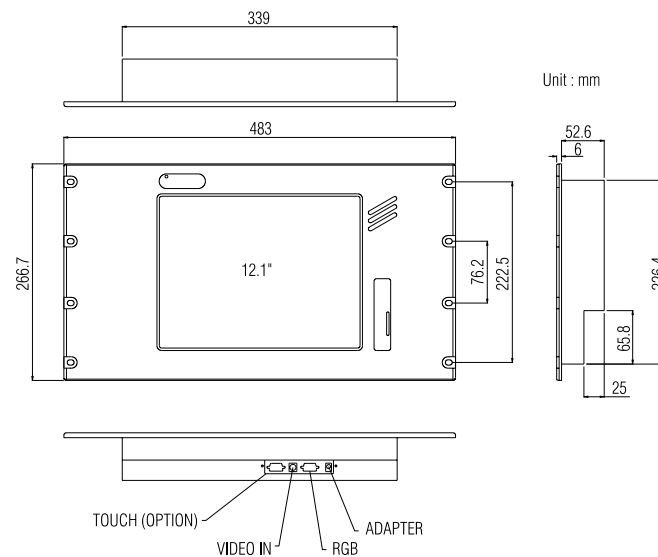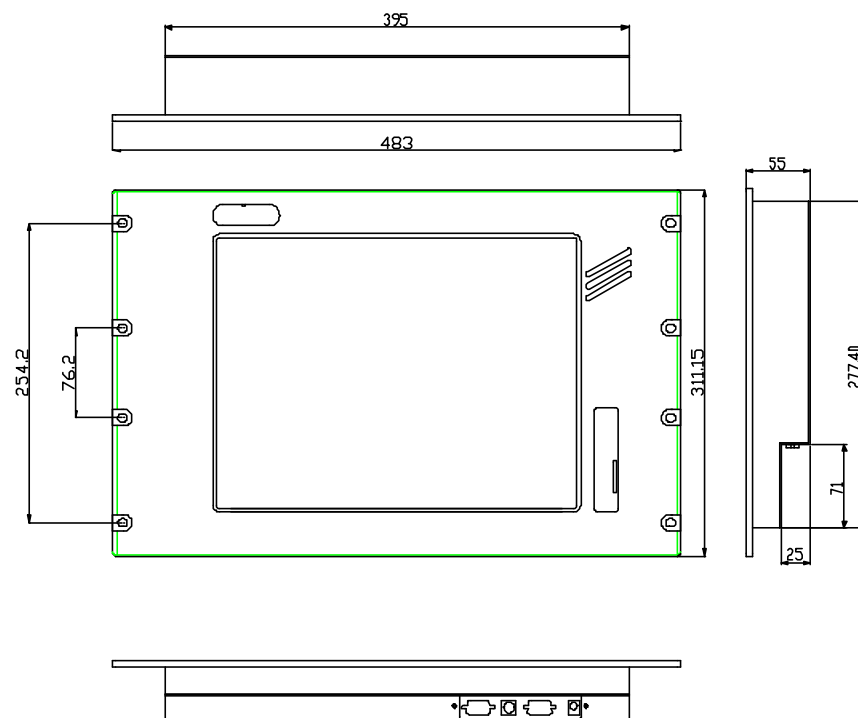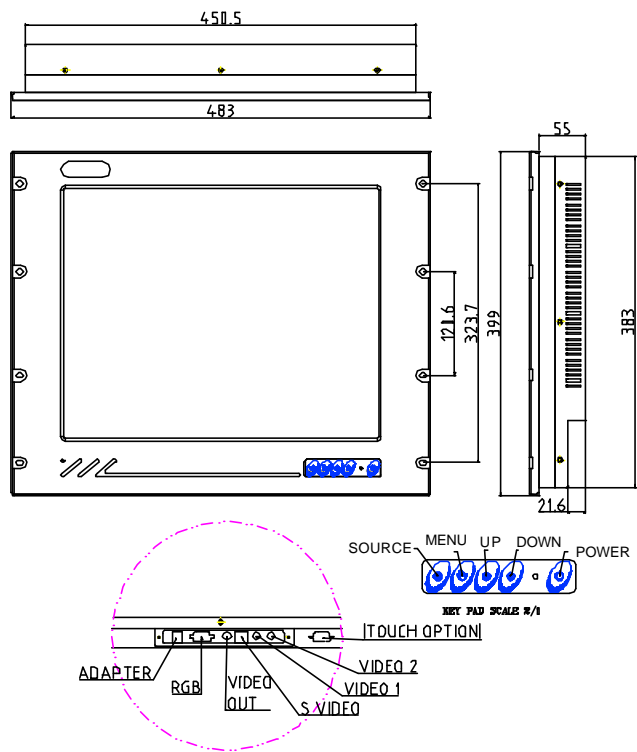
This page is intentionally left blank.

2. Installation

2.1.   Before Unpacking

For optimal use, it is important to locate the LCD monitor in a suitable environment.

■   Place the LCD monitor on a stable, level surface, with good ventilation, and away from direct sunlight, excessive dust, dirt

heat, water, moisture and vibration.

2.2.   Terminals on the Rear Panel

MRAB 12, MRAD 15
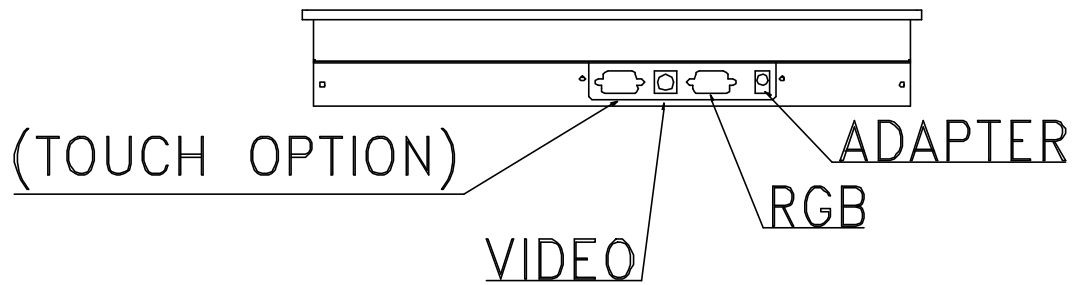
MRAE 18
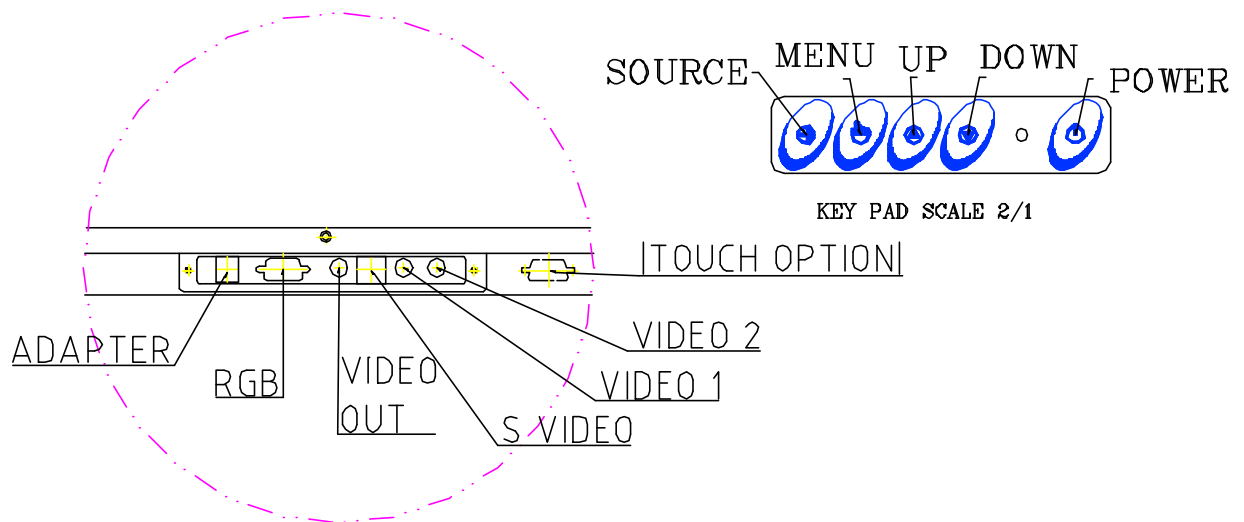
2.3.   Connecting Power

To supply the LCD monitor with power, use the provided AC/DC adapter and the power cord to connect to the power output socket of the computer. Fasten the connections securely.

Note: If your computer is not equipped with such a power output socket for the monitor, you may apply a power cord to connect to the provided AC/DC adapter and then plug it into the wall outlet. The plug should meet the electrical requirements of your country.
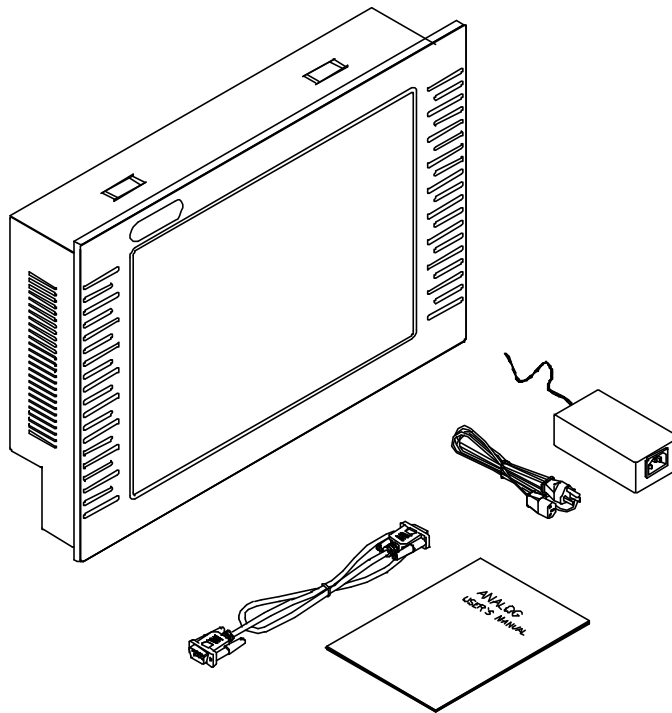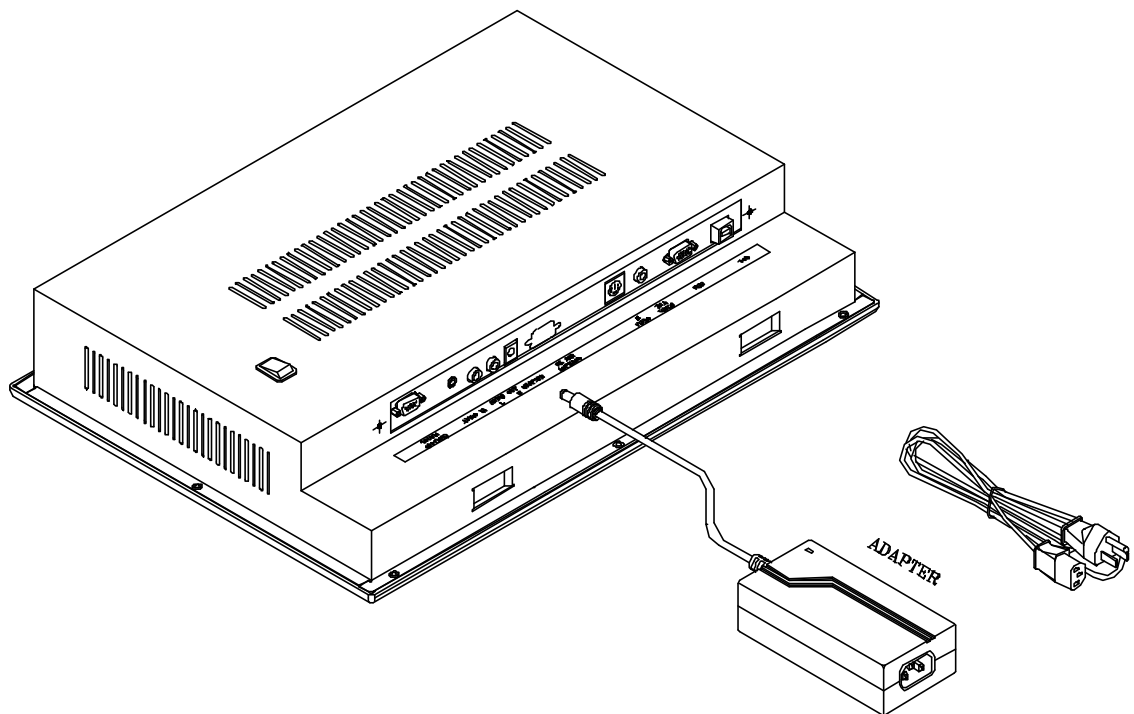
A surge protector plugged between the AC/DC adapter and the wall outlet is recommended to prevent the effects of sudden current variations from harming the LCD monitor.

2.4.   Connecting the Computer

- Turn off the computer and the LCD monitor before connecting them.

- Use the monitor-to-PC signal cable to connect the LCD monitor to the VGA port in your computer. The cable heads are the same on either side.

- Fasten the connections securely.
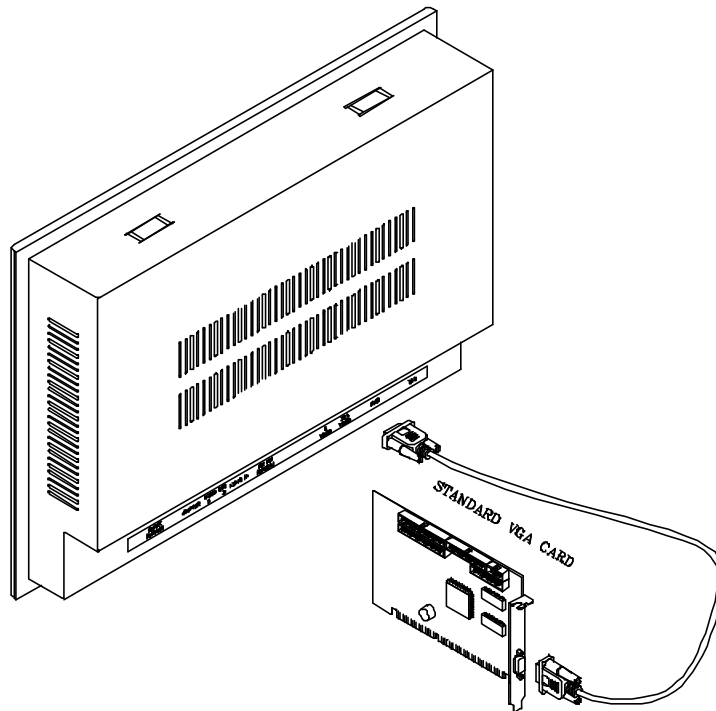
2.5. Desktop (Optional)
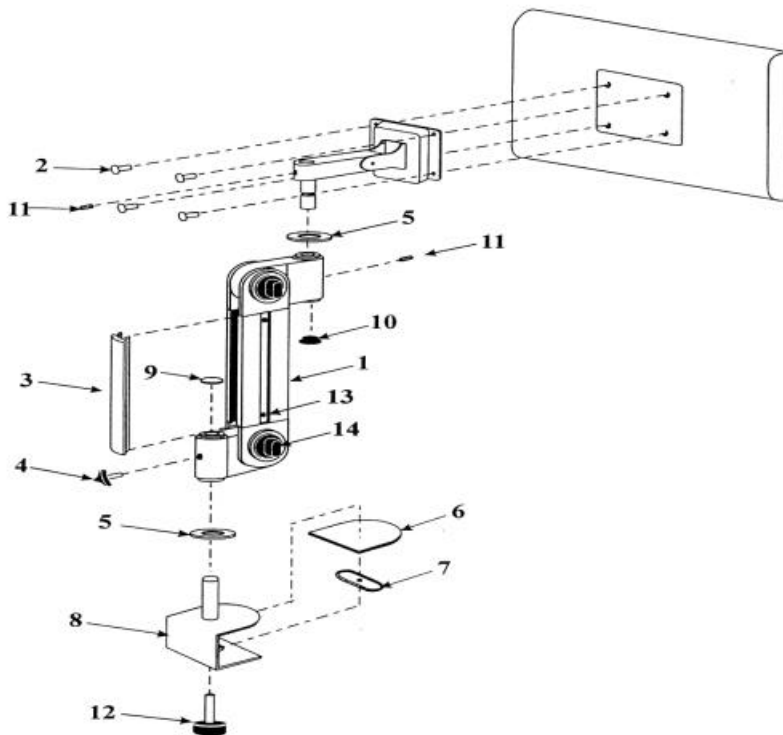
Important Information

1. You can adjust the tightness of arm rotation by turning #4 knobs clockwise.
2. You can adjust the tightness of display rotation by turning # 11 hex set screws clockwise or counterclockwise by attached 3 mm hex key wrench.
3. Normally, you do not need adjust #14 knobs. If it is necessary to do so, you may turn the #14 knobs clockwise or counterclockwise to adjust the friction for the best lifting operation of your LCD arm, but do not turn #14 knobs off.
4. You can counter-balanced adjust the tilt of your display for 45 degrees upward or 25 degrees downward. Hex key wrenches are attached for adjusting screw tightness when it is necessary.
5. The LCD display is pivot adjustable.
6. The cable can be organized inside the arm housing by removing and inserting #3 plastic cover.
7. Do not screw the #13 fasteners off.

2.6.　　Wall Mounting (Optional)
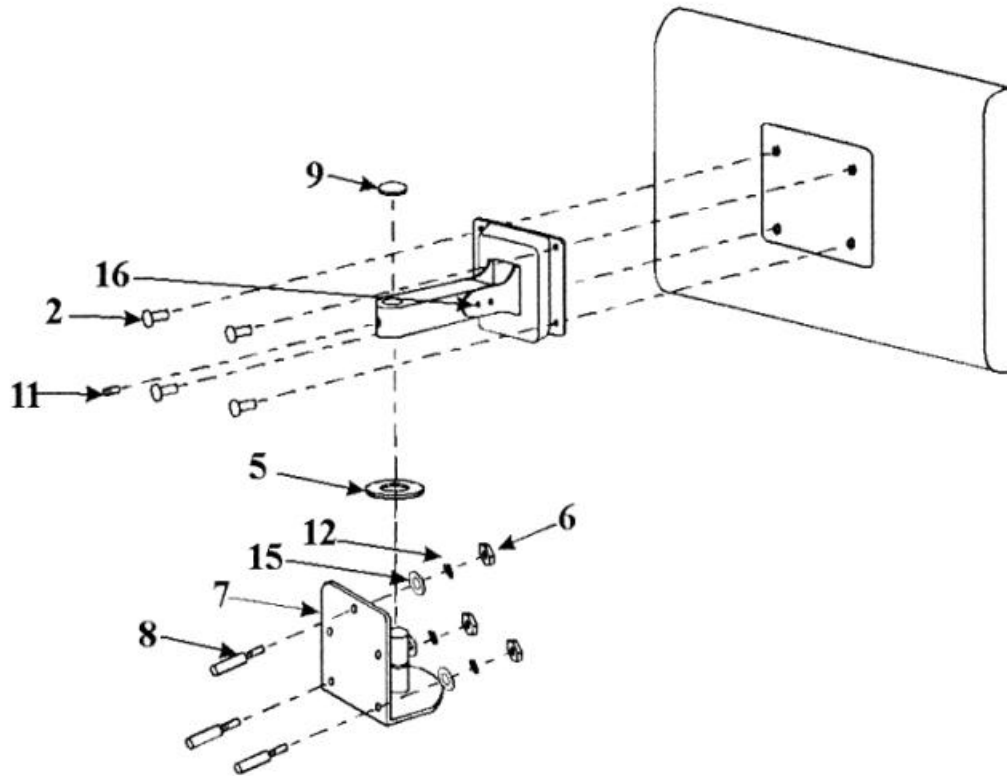
Important information

1. You can adjust the tightness of monitor rotation by turning #11 set screws Clockwise or counterclockwise by the attached 3 mm hex key wrench.
2. Monitor tilt adjustment range is 45 degrees up or 25 degrees down. Adjust #16 hex screw using the attached hex keys to the best tilt friction when you first use your LCD arm.
3. The LCD monitor is portrait/landscape pivot adjustable to 360 degrees.

2.7. Rack Mounting

You can select different front panels for 19" rack mounting on 12.1"(MRAB 12) and 15" (MRAD 15) LCD panels.

ANALOG ROCK MOUNT
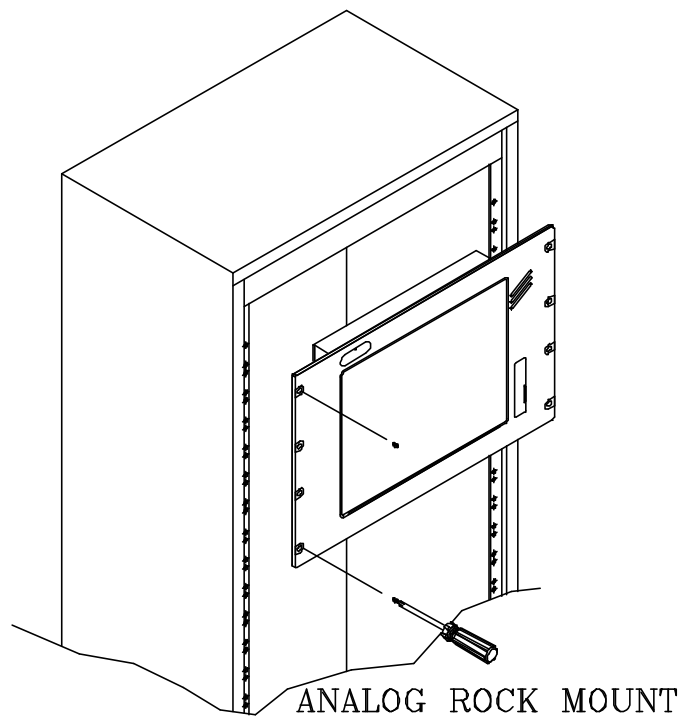
This page is intentionally left blank.

User Controls

3.1. OSD Controller

The LCD monitor is very simple to operate. There are five controls below the front panel:

```
SOURCE

MENU

UP

DOWN

POWER
```
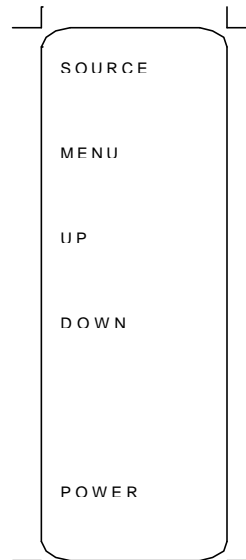
SOURCE	**PC & Composite Video Input Source change select**
	To scroll through items and locate them for adjustment in each page of the OSD menu, press the Select button.
MENU	**Menu**
	To activate the OSD menu, press the MENU button. When locating an item you like to adjust in the OSD menu, press to bring up the corresponding sub-menu for options.
UP	**Increase / Moving Down Button / Enter Button**
	To move the locating cursor forward in the OSD menu, press the UP button. To increase the value while adjusting a parameter, press the UP button.
DOWN	**Decrease / Moving Up Button**
	To move the locating cursor backward in the OSD menu, press the DOWN button. To decrease the value while adjusting a parameter, press the DOWN button.
POWER	**Power Switch**
	Push up the POWER switch to turn on the LCD monitor backlight and the green power LED will light up.

3.2.   On Screen Display [OSD]

There are eight options in the OSD menu. Press the MENU button to Choose the items you would like to adjust.

\<Menu>

```
BASIC SETTING
POSITION
SCREEN SETTING
AUTO ADJUST
MENU SETTING
RECALL
ALL RESET
EXIT
```

\<BASIC SETTING>

```
BRIGHTNESS   128
CONTRAST     128
COLOR CONTROL
EXIT
```

BRIGHTNESS: To adjust the black color level of the image use the **UP** and **DOWN** buttons.

CONTRAST: To adjust the white color level of the image use the **UP** and **DOWN** buttons.

.

COLOR CONTROL:

```
┌─────────────────────────────────┐
│ COLOR 1                         │
│ COLOR 2                         │
│ COLDR 3                         │
│ USER                            │
│ EXIT                            │
│                                 │
├─────────────────────────────────┤
│                                 │
└─────────────────────────────────┘
```

COLOR1: To set the color temperature of the image
to 9300 K.

COLOR2: To set the color temperature of the image
to 6500 K.

COLOR3: To set the color temperature of the image
to 5000 K.

USER: To set the RGB color of the image by user
definition.

EXIT: To return to the previous menu.

EXIT (Under BASIC SETTING): To return to the previous menu.

<POSITION>

PHASE	**10**
H-SIZE	**32**
H-POSITION	**32**
V-POSITION	**32**
EXIT	

PHASE: To adjust the noise of the image.
H-SIZE: To adjust the horizontal size of the image.
H-POSITION: To adjust the horizontal position of the image.
V-POSITION: To adjust the vertical position of the image.
EXIT: To return to the previous menu.

<SCREEN SETTING>

GRAPHIC/TEXT
EXPANSION
SMART SCALE
EXIT

GRAPHIC/TEXT: To exchange the 640x400 (60Hz) / 720x350 (60Hz).
                          (Not for Windows OS).
EXPANSION: To expansion the image of full screen to shrink the
                          image to normal (1piexl to 1piexl). (Not for 640 x 840).
SMART SCALE: To adjust the image to interpolation.
EXIT: To return to the previous menu.

<AUTO ADJUST>

```
AUTO ADJUST
AUTO TRANCKING
AUTO POSITION
EXIT
```
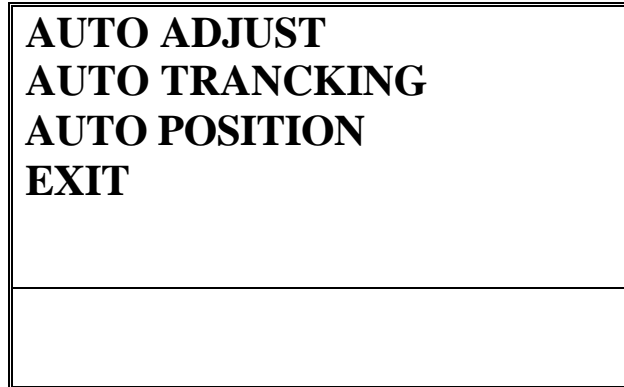
AUTO ADJUST: To auto tune the tracking & position. **Please make use of this feature whenever the VGA input has been changed.**
AUTO TRACKING: To auto tune the H-SIZE & PHASE of the image.
ATUO POSITION: To auto tune the horizontal & vertical position of the image.
EXIT: To return to the previous menu.

<MENU SETTING>

```
LANGUAGE
MENU POSITION
DISPLAY INFO
FW VERSION
EXIT
```

LANGUAGE: To select English or Japanese for the OSD
MENU POSITION: To adjust the horizontal & vertical position of the OSD.
DISPLAY INFO: To show the PC input horizontal & vertical frequency & Resolution of the image.
FW VERSION: To show the version of the system BIOS.
EXIT: To return to the previous menu.

<RECALL>

To reset the monitor to the las tsaved value.

<ALL RESET>

To recover the BIOS default setting.

<EXIT>

To close the OSD and saving all setting values.

Appendix A   I. MRAB 12

Panel

Type	Color TFT
Size	Diagonal 12.1"
Brightness	250 nits (250 cd/m2)
Backlight Lifetime	25,000 hrs
Contrast Ratio	250: 1
Pixel Pitch	0.3075 (H) x 0.3075 (V) mm
Viewing Angle (Horizontal)	120^0
Viewing Angle (Vertical)	100^0
Resolution	800x600
Display Modes	Full Screen in 640x480, 800x600 mode
Color	262K
Input Signal	Analog RGB (0.7 V p-p, 75ohms)
Compatibility	VGA, SVGA, XGA, IBM PC, Mac
Power Management	VESA DPMS

Power Consumption

On- Working	48 watts (max.)
On- Standby	4 watts
Input Voltage	AC 90~264V, 50~60Hz
Output	12VDC / 3A

II.   MRAD 15

Panel

Type	Color TFT
Size	Diagonal 15"
Brightness	250 nits (250 cd/m2)
Backlight Lifetime	25,000 hrs
Contrast Ratio	300:1
Pixel Pitch	0.279(H) x 0.279(V) mm
Viewing Angle (Horizontal)	160^0
Viewing Angle (Vertical)	160^0
Resolution	1024x768
Display Modes	Full Screen in 640x480, 800x600, 1024x768 mode
Color	262K
Input Signal	Analog RGB (0.7 V p-p, 75ohms)
Compatibility	VGA, SVGA, XGA, IBM PC, Mac
Power Management	VESA DPMS

Power Consumption

On- Working	48 watts (max.)
On- Standby	4 watts
Input Voltage	AC 90~264V, 50~60Hz
Output	12VDC / 3A

III.   MRAE 18

Panel

Type	Color TFT
Size	Diagonal 18.1"
Brightness	235 nits (235 cd/m2)
Backlight Lifetime	25,000 hrs
Contrast Ratio	300: 1
Pixel Pitch	0.2805 (H) x 0.2805 (V) mm
Viewing Angle (Horizontal)	160^0
Viewing Angle (Vertical)	160^0
Resolution	1280x1024
Display Modes	Full Screen in 640x480, 800x600, 1024x768, 1280x1024 mode
Color	16M
Input Signal	Analog RGB (0.7 V p-p, 75ohms)
Compatibility	VGA, SVGA, XGA, IBM PC, Mac
Power Management	VESA DPMS

Power Consumption

On- Working	60 watts (max.)
On- Standby	4 watts
Input Voltage	AC 90~264V, 50~60Hz
Output	12VDC / 3A

Standard Timing

RGB Input Format:

Supported Analog RGB Input Formats

MODE	Resolution	Horizontal (KHz)	Vertical (Hz)	Polarity (H/V)
TEXT	640X350	31.469	70.087	(+/-)
	720X350	31.469	70.087	(+/-)
	720X400	31.469	70.087	(-/+)
	640X400	31.469	70.087	(-/+)
	640X350	37.861	85.08	(+/-)
	720X350	37.861	85.08	(+/-)
	720X400	37.861	85.08	(+/-)
	640X400	37.927	85.039	(-/+)
	640X400	24.828	56.40	(-/-)
VGA	640X480	31.468	59.94	(-/-)
	640X480	37.861	72.809	(-/-)
	640X480	37.5	75	(-/-)
	640X480	43.269	85.008	(-/-)
	640X480	45	90	(+/+)
SVGA	800X600	35.156	56.26	(+/+)
	800X600	37.879	60.317	(+/+)
	800X600	48.077	72.188	(+/+)
	800X600	46.875	75	(+/+)
	800X600	53.674	85.061	(+/+)
XGA	1024X768	48.363	60.004	(-/-)
	1024X768	56.069	70.069	(-/-)
	1024X768	58.088	72.98	
	1024X768	60.023	75.029	(+/+)
	1024X768	68.677	84.997	(+/+)
	1024X768(I)	35.522	43.479	(+/+)
MAC	640X480	35	66.67	(+/-)
	832X624	49.729	74.5	(-/-)

Power Management System

The LCD monitor complies with the power management regulations of VESA DPMS (version 1.0p). It is provided with two phases of power saving modes by detecting the horizontal or vertical synchronous signal.

When the system is in the Power Saving mode or an incorrect timing is detected, the monitor screen will be blank and the power LED will flash orange.

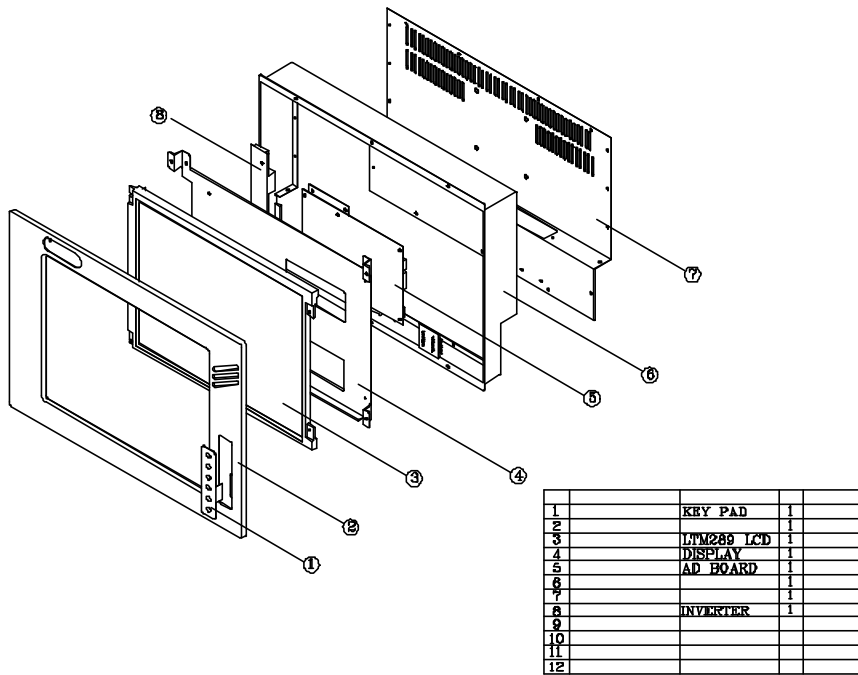| Status	Power Consumption	Time to Resume	LED Color
On – Working	48 watts (max.)		Green
On – Standby	less than 4 watts	3 seconds	Orange

Troubleshooting

To solve the following problems, you may need to refer to **Appendix A, Standard Timing** for compatible display specifications.
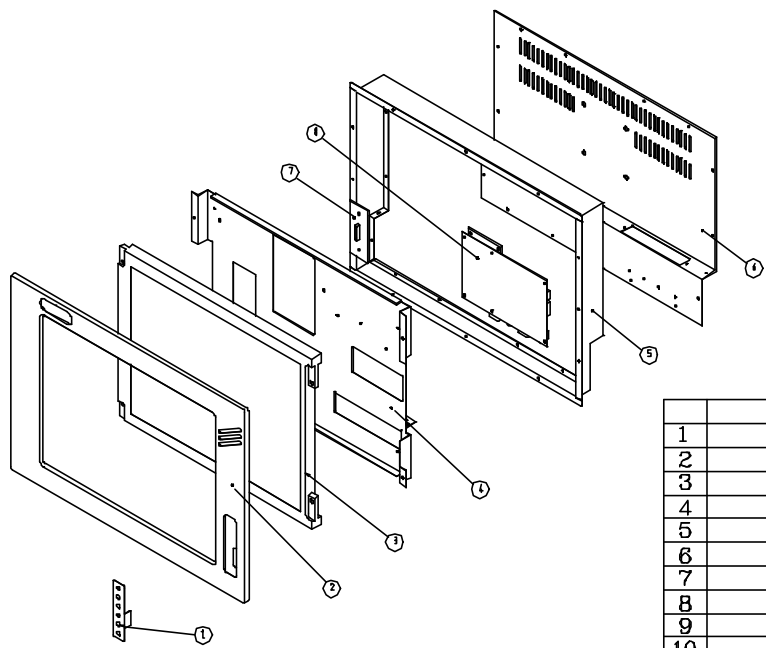
- Problem: Unclear or Unsteady Display
  Actions:
    1. Change to the Windows's SHUT DOWN screen.
    2. Activate the OSD menu.
    3. Adjust the frequency setting to stabilize the display.
    4. Adjust the phase setting to clarify the image.
    5. You might need to repeat steps 3 and 4 to find balanced values for the best quality picture.

- Problem: No display is shown on the LCD monitor.
  Actions:
    1. Make sure the LCD monitor is powered on by checking if the power LED is lit. Check if all the connections are secure and the system is running correctly.
    2. If the power LED lights up green, but there is still nothing displayed; connect your PC with another external monitor. If your PC works properly with that monitor, then it is possible that the VGA card timing of the system may be outside the LCD monitors synchronous range. You may need a qualified technician for help.

- Problem: "Not Supported Mode" is shown on the display.
  Action: This could be a mistake you made in the OSD menu while choosing the INPUT SOURCE: RGB or VIDIO. Or, it is possible that you have chosen a timing that is outside the LCD monitors synchronous range. Recalling the factory default values may help to bring the screen back to normal.

- Problem: The LCD monitor does not work properly under Windows, but it functions all right in DOS mode.
  Action: Make sure the display mode you choose in Windows matches the LCD monitor.

Appendix B Exploded Diagrams

I. MRAB 12

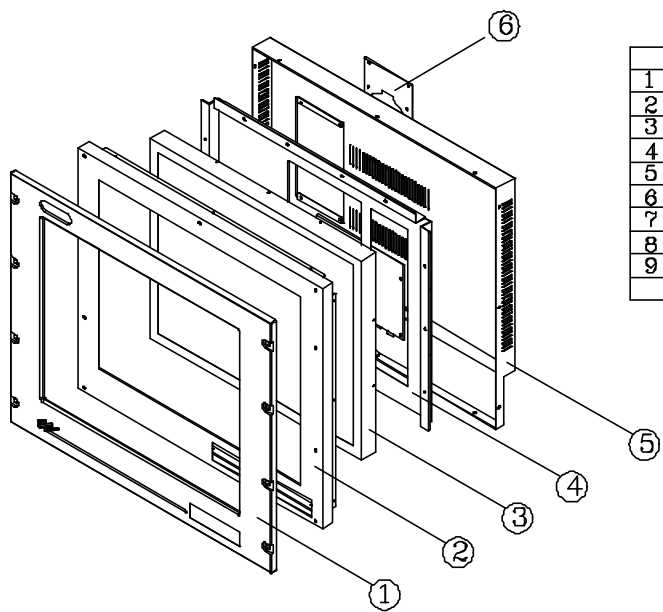| 1		KEY PAD	1	
2			1	
3		LTM289 LCD	1	
4		DISPLAY	1	
5		AD BOARD	1	
6			1	
7			1	
8		INVERTER	1	
9				
10				
11				
12				

II.　MRAD 15

1		KEY PAD	1	
2			1	
3		LCD 15"	1	
4		DISPLAY	1	
5			1	
6			1	
7			1	
8		AD BOARD	1	
9				
10				

III.　MRAE 18

1			1	
2			1	
3		18.1LCD	1	
4		DISPLAY	1	
5			1	
6			1	
7				
8				
9				